Coiltronics MPI2520

High Current, Low Profile, Miniature Power Inductors

Product description:

- Halogen free, lead free, RoHS compliant
- 125°C maximum total temperature operation
- 2.7 x 2.2 x 1.0 / 1.2mm maximum surface mount package
- Magnetically shielded, low EMI
- Inductance range from 0.47µH to 10.0µH
- Current range from 1.1 to 4.8 amps

Applications:

- Mobile/smart phones
- Handheld/mobile equipment
- Digital cameras
- Media players
- GPS
- MP3 Players
- Tablets/e-readers

Environmental data:

- Storage temperature range (Component): -40°C to +125°C
- Operating temperature range: -40°C to +125°C (ambient + self-temperature rise)
- Solder reflow temperature: J-STD-020D compliant

Packaging:

- Supplied in tape and reel packaging, 3000 parts per 7" diameter reel

The Coiltronics brand of magnetics (formerly of the Bussmann Division of Cooper Industries) is now part of Eaton's Electrical Group, Electronics Division.

Coiltronics is now part of Eaton
Same great products plus even more.

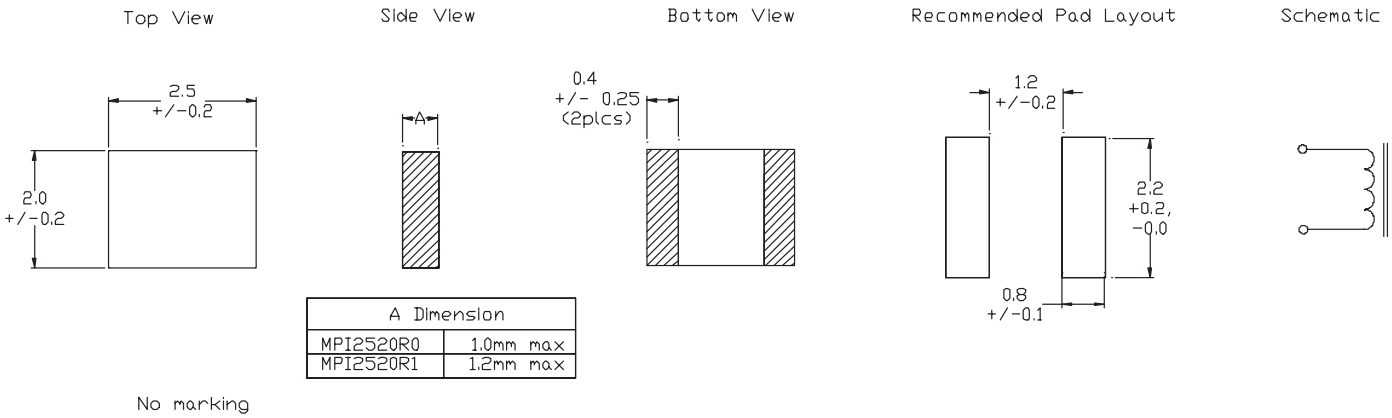
Powering Business Worldwide

Product specifications

Part Number[5]	OCL1 (µH)±20%	I_{rms}[2] (Amps)	I_{sat}[3] (Amps)	DCR (mΩ) @ 25°C typical	DCR (mΩ) @ 25°C max	K-Factor[4]
R0 —1.0mm Height						
MPI2520R0-R47-R	0.47	4.1	4.4	28	34	2887
MPI2520R0-1R0-R	0.9	3.2	3.2	50	60	1925
MPI2520R0-1R5-R	1.5	2.4	2.6	80	96	1444
MPI2520R0-2R2-R	2.2	2.2	2.4	103	124	1283
MPI2520R0-3R3-R	3.3	1.6	1.6	190	228	1050
MPI2520R0-4R7-R	4.7	1.4	1.4	240	288	825
R1 - 1.2mm Height						
MPI2520R1-R47-R	0.47	4.5	4.8	20	24	2310
MPI2520R1-1R0-R	1.0	3.7	4.0	35	42	1925
MPI2520R1-1R5-R	1.5	2.9	3.4	55	66	1444
MPI2520R1-2R2-R	2.2	2.3	2.7	75	90	1255
MPI2520R1-3R3-R	3.3	1.8	2.4	105	126	962
MPI2520R1-4R7-R	4.7	1.6	1.9	150	180	825
MPI2520R1-5R6-R	5.6	1.5	1.5	200	240	679
MPI2520R1-6R8-R	6.8	1.3	1.3	300	360	679
MPI2520R1-100-R	10.0	1.1	1.2	390	468	525

1. Open Circuit Inductance (OCL) Test Parameters: 1MHz, 0.1Vrms, 0.0Adc, 25°C
2. I_{rms}: DC current for an approximate temperature rise of 40°C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed 125°C under worst case operating conditions verified in the end application.
3. I_{sat}: Peak current for approximately 30% rolloff at +25°C
4. K-factor: Used to determine B_{p-p} for core loss (see graph).
   $B_{p-p} = K * L * \Delta I$. B_{p-p}:(Gauss), K: (K-factor from table),
   L: (Inductance in µH), ΔI (Peak to peak ripple current in Amps).
5. Part Number Definition: MPI2520Rx-yyy-R
   - MPI2520Rx = Product code and size
   - yyy = Inductance value in µH, R = decimal point, if no R is present then third character = number of zeros.
   - "-R" suffix = RoHS compliant

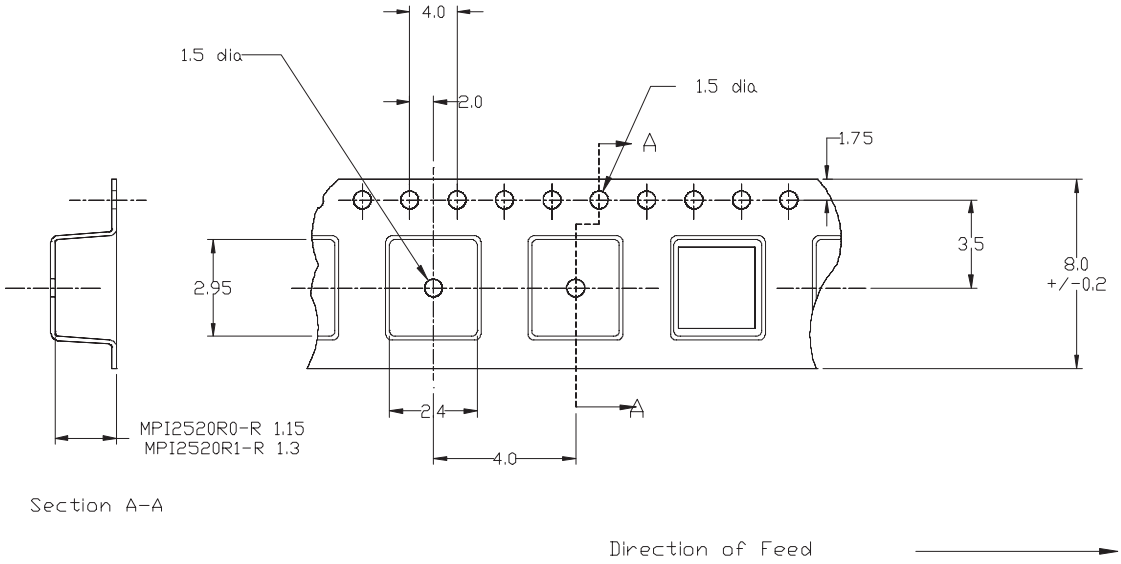
Dimensions - mm



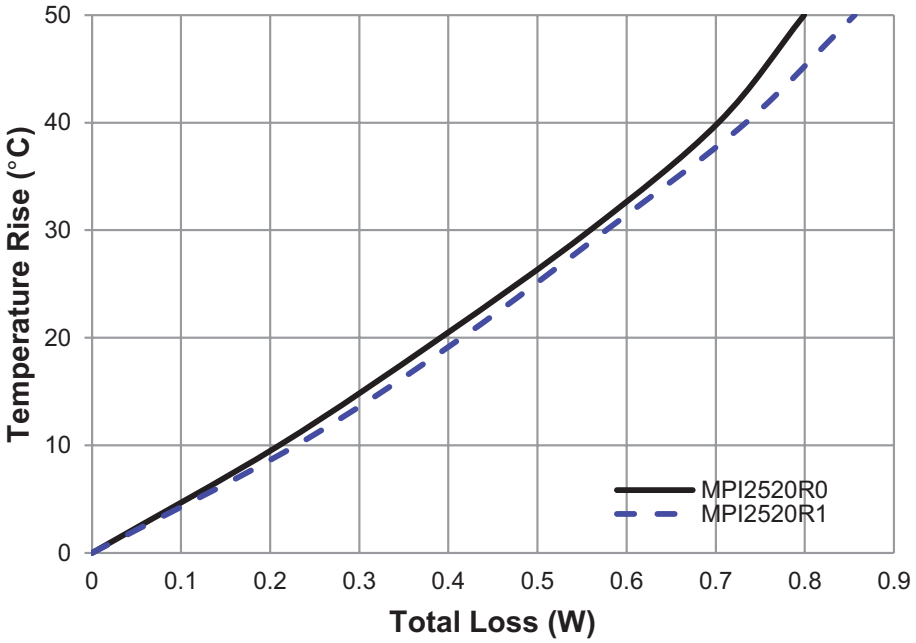
A Dimension	
MPI2520R0	1.0mm max
MPI2520R1	1.2mm max

No marking

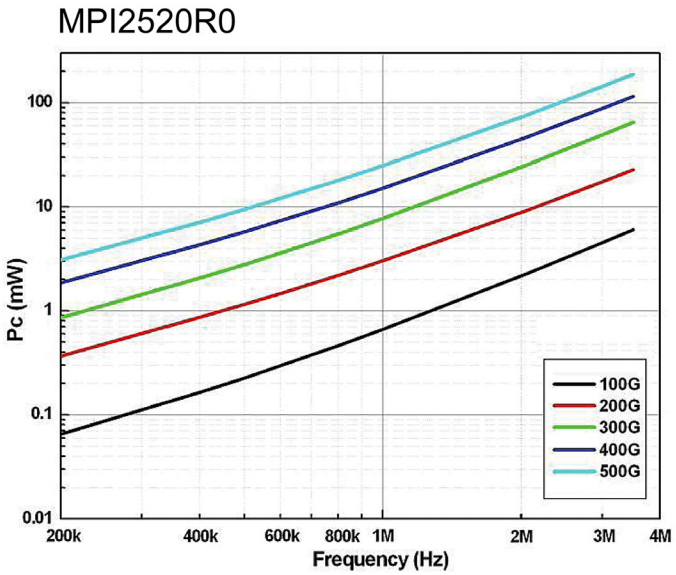
Packaging information - mm

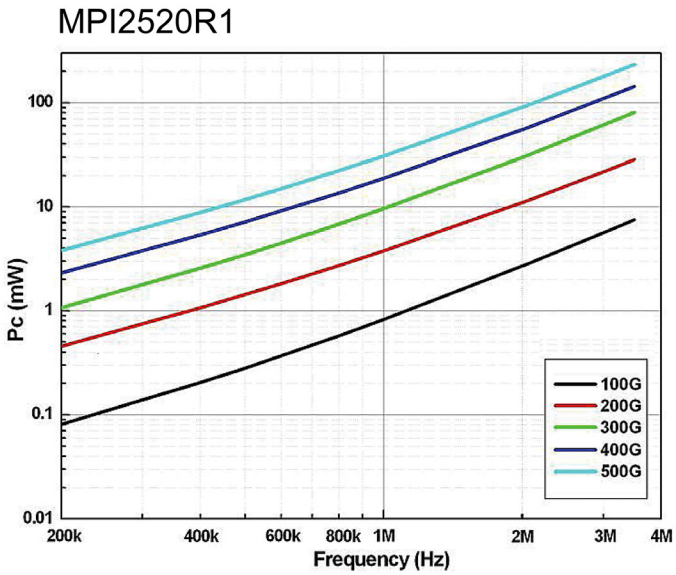


Temperature rise vs. total loss

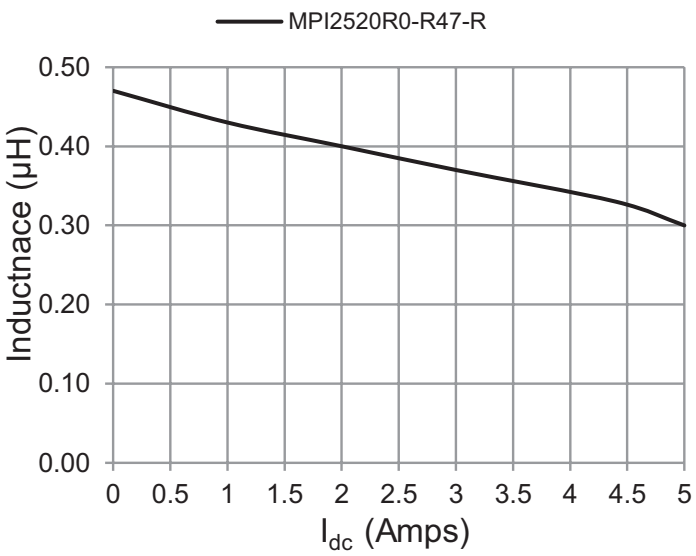


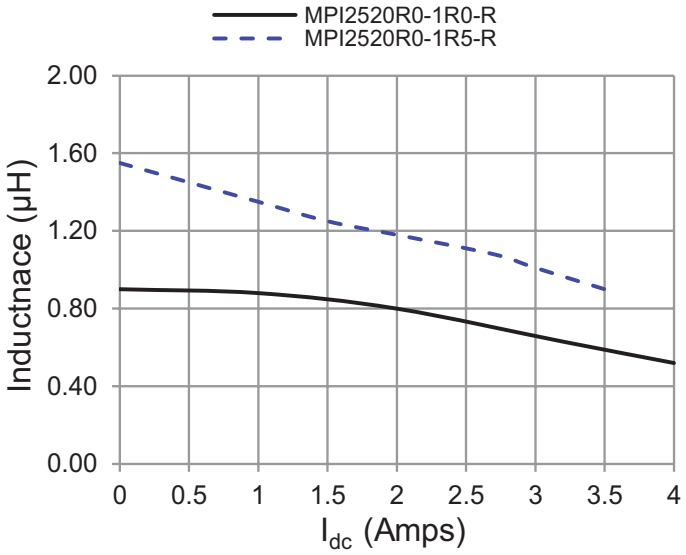
Core loss

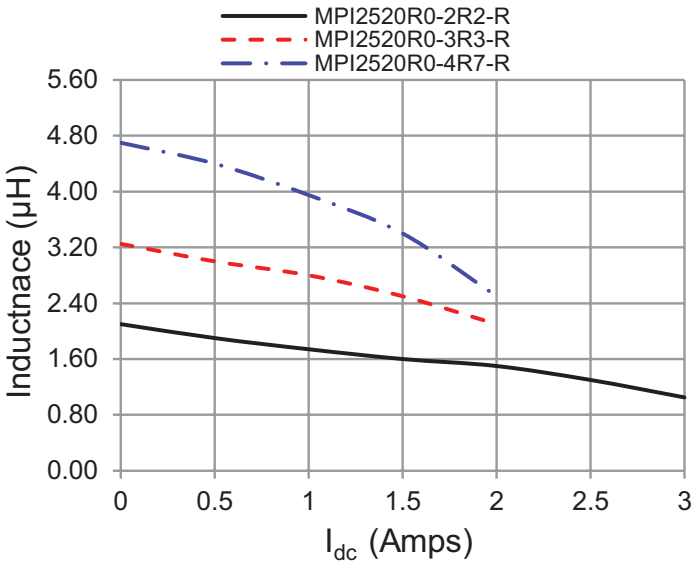


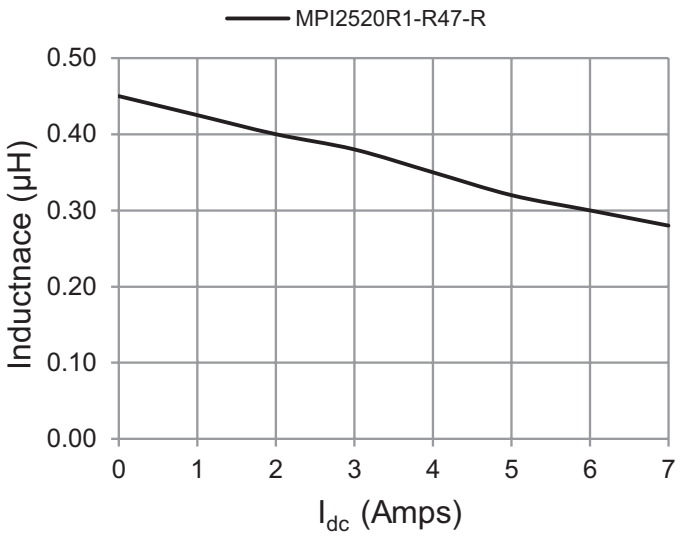


Inductance characteristics

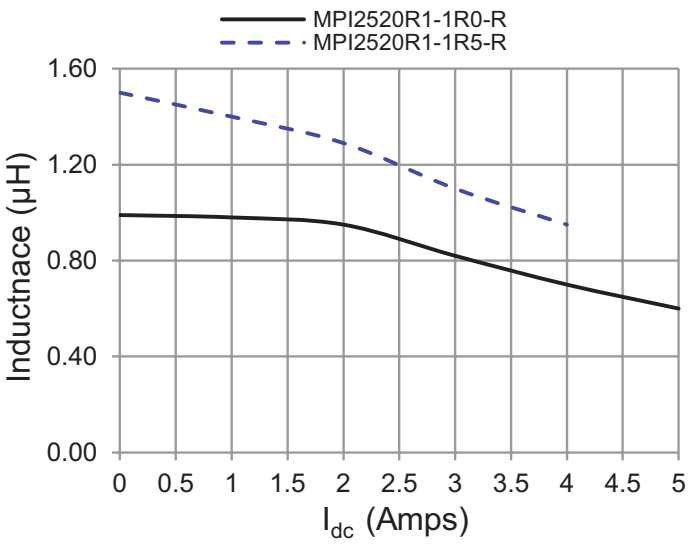


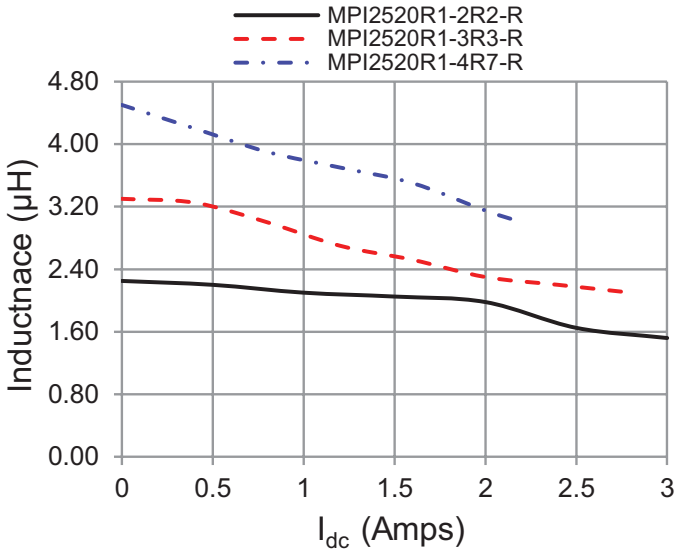


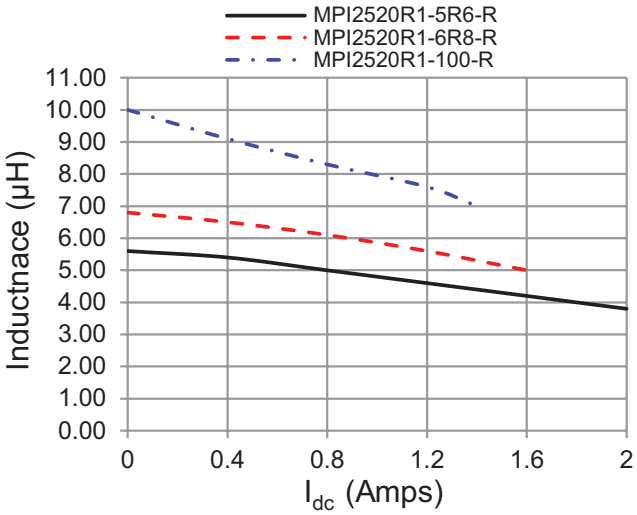




Inductance characteristics







Solder reflow profile

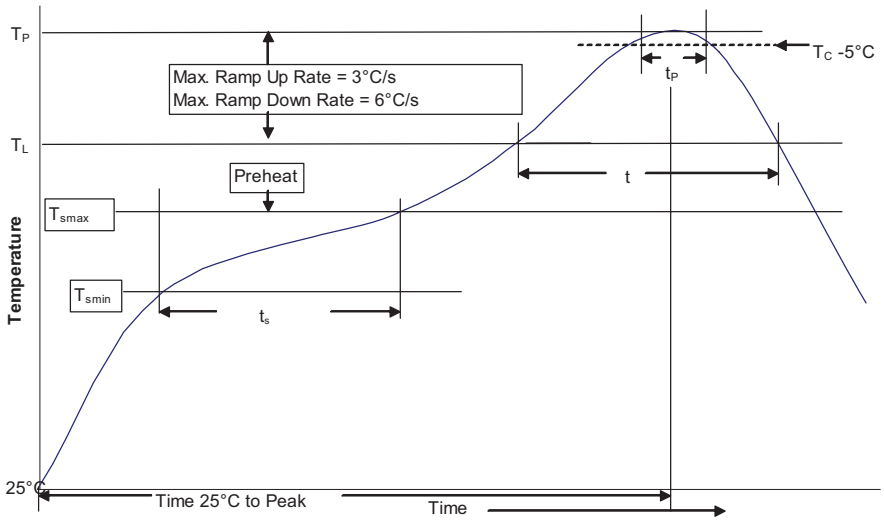


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ ≥350
<2.5mm	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >2000
<1.6mm	260°C	260°C	260°C
1.6 – 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Reference JDEC J-STD-020D

Profile Feature		Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak	• Temperature min. (T_{smin})	100°C	150°C
	• Temperature max. (T_{smax})	150°C	200°C
	• Time (T_{smin} to T_{smax}) (t_s)	60-120 Seconds	60-120 Seconds
Average ramp up rate T_{smax} to T_p		3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T_L) Time at liquidous (t_L)		183°C 60-150 Seconds	217°C 60-150 Seconds
Peak package body temperature (T_P)*		Table 1	Table 2
Time (t_p)** within 5 °C of the specified classification temperature (T_C)		20 Seconds**	30 Seconds**
Average ramp-down rate (T_p to T_{smax})		6°C/ Second Max.	6°C/ Second Max.
Time 25°C to Peak Temperature		6 Minutes Max.	8 Minutes Max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

** Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.

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Publication No. 10199 — BU-SB131200
January 2014